

# ABSTRACT OF THE DISCLOSURE

Displacements of respective joints corresponding to respective joint elements (J9 and the like) of a rigid link model (S1) representing a two-legged walking mobile  
5 body (1) are sequentially grasped. Also at the same time, values, in a body coordinate system (BC), of an acceleration vector of the origin of the body coordinate system (BC) fixed to a waist (6) as a rigid element, a  
10 floor reaction force vector acting on each leg (2), and a position vector of the point of application of the floor reaction force vector are sequentially grasped. With the use of the grasped values, joint moments respectively generated in an ankle joint (13), a knee joint (14), and a hip joint (9) of each leg (2) are sequentially estimated  
15 based on an inverse dynamics model using the body coordinate system. The estimation accuracy of the joint moments of the leg can be enhanced by reducing arithmetic processing using tilt information of the two-legged walking mobile body relative to the gravity direction as  
20 much as possible.